



INTER-OFFICE CORRESPONDENCE

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H. B. Lovejoy, M.D.
R. P. Lynch
W. Oglesby
T. G. Taylor

Date: June 3, 1975
From: F. C. Denn
Location: 10 West
Subject: Trichlorethylene Meeting -
Lake Charles
May 15, 1975

A meeting was called at Lake Charles on May 15 to discuss trichlorethylene from the standpoint of containment, health and hygiene. Those in attendance were: H. B. Lovejoy, M.D., R. Green, W. Oglesby, R. P. Lynch, H. J. Hoenes, T. G. Taylor, B. Alleman, L. Bryant, O. L. Cromeans, J. Lafleur, J. A. Clapperton and F. C. Dehn.

I. Medical Program - Dr. H. B. Lovejoy

Area B personnel are all treated alike on their physical tests. These consist of their annual physical, the SMA-12 and GGPT, and a couple of other tests. Men over 40 also get a chest x-ray and pulmonary function tests. The SMA-12 tests were begun about one and a half years ago. Men with ten or more years of experience in the organics area receive these tests every six months. There was some question as to whether other tests would be helpful. In connection with any cardiac effects of trichlorethane, an electrocardiogram could help to detect cardiac arrhythmia. Dr. Grant has requested this test for those people exposed to high heat stress. At the vinyl chloride medical meeting, it was learned that some companies are performing liver scans. This is really no substitute, however, for the liver biopsy.

Dr. Bell has been requested to assemble the Chemical Division medical doctors involved with chlorinated organics in our plants, along with Dr. Grant. The medical people should arrive at a best judgment of the medical program for the Chemical Division as it applies to employees working in chlorinated organics.

Further, attendance at such meetings as the vinyl chloride medical meeting was encouraged. We are definitely interested in developing good medical programs and want to provide support and uniformity as part of the Chemical Division policy.

Provisions for removing men from Area B when their liver functions indicate a need for reduced exposure to chlorinated organics was discussed. Some accommodation must be made with the union here to provide this freedom of motion for health reasons. Dow has established medical bumping rights in their areas. Russ Hanna has been requested to contact Dow personnel with respect to the provisions they employ. PPG must establish its own policy here.

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For purposes of our own records, as well as facility to OSHA inspectors, a systematized method of maintaining medical and environmental exposure data is required. Plans in the environmental department were to put these data on computers. This was part of the basis for establishing the uniform reporting sheets for area and personnel monitoring. The medical programs would likewise be a part of this recordkeeping and we hope also put on the computer. There were a variety of discussions debating the merits of computerized recordkeeping as opposed to employing another clerical person in the medical department at Lake Charles. The desirability of a uniform system was further emphasized by the need for the Plant Medical Doctor to have available at his immediate request, each employee's work history if the medical condition requires it. Action will be taken here.

Lake Charles is encountering problems in hiring healthy people. As many as 60 percent can be turned down for medical reasons. Some companies have established a policy of not hiring anyone who has one factor on the blood test out of line. This can become a serious problem in connection with pre-employment physicals, employment policies, and EEO.

II. Trichlorethylene Area Monitoring - H. J. Hoenes

Two pages of data were distributed presenting the results of area samples taken in and about the trichlorethylene area. This was the data obtained and presented to Lucille Mitchell at the time of her visit on February 13. In addition, two new area values -- and some 27 additional personnel sample values -- had been added to the list since then. The worst situations were during regeneration of the dryers and product loading. There was some confusion regarding whether these were calcium chloride or alumina dryers. The alumina dryer regeneration situation is being taken care of. There appears, at this time, to be little hope for much improvement in controlling the vapors in and about the calcium chloride dryers when they are dumped for recharging.

Concern was expressed over the practice of sampling for short periods of time, i.e., 15 minutes, and calculating this for reporting purposes as a time weighted average (TWA). We have requested Hugh Finneran to contact OSHA asking for an explanation and legal opinion on the minimum time for use in calculating the TWA values. The second exhibit consisted of a similar list of personnel samples taken in and about the trichlorethylene area. There appeared to be a drop in the values after about mid-February of 1975. There had been no change in analytical procedure or in operations. Cromeans was of the opinion that the employees are becoming more conscious and careful of chlorinated solvents.

III. Exposure Records

In the case of vinyl chloride, there have been no people exposed to 25 ppm or more since April 1, 1975. Lake Charles is revising their form to notify employees of exposure.

IV. Exposure Goals - Bob Lynch

Lake Charles has established a goal to stay below 10 ppm for any exposure in Area B. Their principal objective, therefore, is to seek out sources of leaks, confirm their suspicion, and correct any undesirable situations. In practice, the general foreman scans the analytical results daily. If there is a high value (10 ppm or more), the foreman calls Mark Wood. During an interview and further study, they seek an explanation and identify the source. Operators have been instructed that they should use their respirators whenever the operation they are undertaking may cause a release of VCM or any other organic. The 10 ppm goal does not apply for VCM. The regulations here are 1 and 5 ppm.

Firm requirements have not been established for exposure monitoring of maintenance personnel. Equipment protection and rules of use are to be established.

Current trichlorethylene exposure levels are given as 100 ppm for a TWA. The recent NCI cancer alert is sure to lower this. It was suggested that at the very best, they should expect this to drop to 50 ppm with an action level of 25. If Lake Charles can maintain their goal of 10 ppm or less, they should be in a safe area for trichlorethylene for inhalation exposure.

V. Respirators

There was considerable discussion on respirators, covering the Comfo mask, cartridge types, air line service, and bottled air where hazardous areas exist. For vinyl chloride, the results of the latest Barberton respirator evaluations were again presented. The presence of high humidity (85% relative) has very definite deleterious effects on carbon capacity. In addition, the ease with which the vinyl chloride is released from carbon when breathing in a clean air environment is definitely a drawback and accounts at least in part for the OSHA requirement for throw-away respirators. The Welsh cartridge-type respirator was shown to be good for about 10 hours at 25 ppm vinyl in high relative humidity. There was a reluctance to invest in cartridge respirators because of inconvenience and cost. Regeneration of the Comfo respirators was discussed. In the final analysis, it appears that the only safe practice to follow is to provide air lines and some air bottles which have quick disconnects. If a satisfactory indicating carbon canister type is approved by OSHA, these can be adapted with the same quick disconnect, making it the equivalent of an escape respirator compatible with the permanent air systems.

Trichlorethylene cartridges are to be evaluated at Barberton. Results were not available. As soon as data is available, suitable recommendations will be made by Dr. Bell.

VI. Work Practice

A. Operations - R. Lynch

Lake Charles does not have a work practices manual for trichlorethylene.

Their operations manual does not spell out a number of things needed when a regulation for trichlorethylene issues. The only policy they have in Area B refers to the use of a Comfo mask. These references to the Comfo mask should come out because they have been proven inadequate for vinyl chloride service in Area B.

The Tri-Ethane and VDCM operation manuals contain about a half page of information on each chemical used in the area. These have not been updated. Just recently, Shell has issued an update on epichlorohydrin. This will be included. Epichlorohydrin is a bad actor. One of the Lake Charles men several years ago had a serious foot injury as a result of spilled epichlorohydrin soaking through his shoe.

A process or product sample taken in Area B, other than vinyl chloride, does not have closed purged systems. Most sample systems are flushing to the sewer and the sample taken in a screw cap bottle. In the case of tanks, the sample is purged to the ground and then taken in a screw cap bottle. Proper provisions for adequate containment while getting a representative sample must be devised by Lake Charles.

Some revisions in the plant labs to provide better hood space and techniques for maintaining concentrations in the hood will be taken. Pressurized hoods, down draft ventilation, high velocity fans, apron curbing on hoods, and other techniques were discussed and are being tried.

Lake Charles does not have all the information they should have from stabilizer suppliers. Every effort should be made to update our knowledge of the stabilizers being used and in the blends formulated for stabilization. The stabilizer area should likewise be monitored for stabilizer component concentrations.

The filters and dryers were again discussed. The biggest problem will be with the calcium chloride dryers which are changed anywhere from two weeks to six months. Every effort will be made to move all the liquid possible into the system, and then wash the remainder into the sewer. When the Area B sewer system is revised, the calcium chloride dump to sewer should go through the stripper. The air dryer project for use with the alumina dryers should provide a good solution. This project is underway.

The acid pit is one of the more serious areas in Area B. Diversion of some of the lights from the DH system to the tetrachlorinator should help. Very light vapors that are prevelant in the area have been attributed to allyl chloride. If the correcting efforts currently being employed are not successful, the acid pit may have to be covered.

B. Shipping - J. Lafleur

The shipping department has broad area working guidelines. They need to improve things in and about handling Per/Tri storage, especially for barge

and ship loading. Lafleur is looking at two alternatives here. There are no signs identifying chemicals, tanks, etc. in and about the tri-loading area. These should be considered in light of current and anticipated regulations and the variety of loading taking place. Sampling techniques, line purges and other loading operations will require review for the containment of solvent.

Several examples of area and personnel sampling taken in the trichlor loading area show high values. There should be more job and area sampling to identify the problem areas. As an average, it requires about two hours to load a tank car with trichlorethylene. For the most part, the loader is not present during this time. He is exposed during hook up, then leaves and comes back in time to finish the loading. This is his second exposure period.

C. Maintenance - R. Green

Maintenance personnel have not participated in the personnel sampling program. The areas are monitored while maintenance personnel are working. Contract maintenance handles reboiler cleaning, etc. These are some of the worst jobs and exposure can perhaps at times be high. Lake Charles attempts to balance between heating the reboilers to dryness to drive out all volatiles, yet leaving enough behind so the reboilers can be cleaned. If Lake Charles is not permitted to monitor the contracting personnel, they should provide adequate area monitoring until arrangements can be made to monitor these people.

Very few, if any, of the tanks in Area B are labeled. This was done initially for security reasons, however, regulations will soon require considerable labeling throughout this whole area.

D. Control Room - R. Lynch

The control rooms operate under positive pressure with all the air to the room coming through a carbon filter. Samples taken throughout the control room area have shown it to be free of any action level for chlorinated solvents. The Per Kri control room and lab was in better condition than at the time of the last visit.

E. Laboratory - H. J. Hoenes

The disposition of used vinyl samples is adequately handled through the sampling purge system. Area laboratories use 5-gallon plastic cartons with a funnel and dip tube filling line for liquid solvent samples. All unused samples are discarded into these jugs. Similar precautions should be taken in all laboratories. If this does not adequately contain material vapors, conventional recommended solvent containers with spring-loaded lids should be employed. Disposition of the used samples can take place

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at the most appropriate point in the system (still bottoms plant).



F. C. Dehn

FCD:cb

Attachment

cc: Z. G. Bell - w/att.
W. P. Lawrence - w/att.
H. C. Twiehaus - w/att.
R. E. Widing - w/att.

ARFA SAMPLING FOR TRICHLORETHYLENE

EXHIBIT I

Date	Sample	Duration	Trichlorethylene, ppm v/v
4-10-73	Main Organic Lab, Center	6 hr	0.6
4-18-73	Main Organic Lab, West	4-1/2 hr	1.4
4-18-73	Main Organic Lab, Center	4-1/2 hr	1.1
4-18-73	Main Organic Lab, East	4-1/2 hr	0.8
4-25-73	Main Organic Lab, G.C. Room	5 hr	1.6
4-25-73	Main Organic Lab, Center	5 hr	2.6
4-25-73	Main Organic Lab, S.E. Corner	5 hr	1.4
6-21-73	Area "B" Maintenance Shop	4-3/4 hr	0.14
11-27-73	EC/VC Plant Lab	5 hr	< 0.1
11-27-73	EDC/MC Plant Lab	5 hr	0.2
11-27-73	Per/Tri Plant Lab	5 hr	5.5
11-27-73	OHC Plant Lab	5 hr	0.1
2-20-74	VCM Loading Rack Office	4 hr	0.6
2-22-74	VCM Process Area	3-1/2 hr	0.4
2-26-74	VCM Process Area, North End-Downwind of P/T	4 hr	0.3
2-26-74	VCM Process Area, Center-Downwind of P/T	4 hr	0.2
2-27-74	VCM Process Area, 4 Samples-Downwind of P/T	4 hr	0.3
2-28-74	VCM Process Area, 4 Samples-Downwind of P/T	4 hr	0.3
2-28-74	Tri-Ethane [®] Area, Downwind of P/T	4 hr	0.4
3- 1-74	Tri-Ethane [®] Area, Downwind of P/T	5 hr	0.2
3- 4-74	Tri-Ethane [®] Area, 4 Samples-Downwind of P/T	4 hr	0.5
3- 4-74	EDC/MC Plant Lab	4 hr	0.8
3- 5-74	EDC/MC Plant Lab	4-1/2 hr	0.6
3- 5-74	Tri-Ethane [®] Area, 2 Samples-Downwind of P/T	4-1/2 hr	0.5
3- 5-74	VCM Process Area, Downwind of P/T	4-1/2 hr	0.3
3- 6-74	VCM Process Area, Downwind of P/T	5 hr	0.3
3- 6-74	Tri-Ethane [®] Area, Downwind of P/T	5 hr	0.3
3- 7-74	VCM Process Area, Downwind of P/T	4 hr	0.3
3- 7-74	Main Organic Lab, Center	4 hr	1.3
5-15-74	Main Organic Lab, G.C. Room	4-1/2 hr	19.0
6-21-74	Main Organic Lab, Hood Room	2 hr	1.0
1-27-75	DH Feed Tank Area, P/T	7 hr	11.0
1-27-75	North of No. 1 Tri Still Reflux Pump and Vent Scrubber, P/T	7 hr	1.7
1-27-75	No. 2 Air Blower East of Tri Drier	7 hr	51.0
1-27-75	Per/Tri Plant Lab	7-1/2 hr	6.1
1-30-75	N.W. Corner of Glass-lined Tank in Acid Pit Area	4-1/2 hr	82.2
1-30-75	South Door of P/T Stabilizer Building	4-1/2 hr	2.7
1-30-75	N.W. Side of DH Feed Tank, P/T	4-1/2 hr	7.2
2- 3-75	Main Organics Lab, Center-North	4 hr	1.4
2- 3-75	Main Organics Lab, Center-South	4 hr	1.0
2- 3-75	Main Organics Lab, Hood Room	2-1/4 hr	1.0
2- 4-75	Main Organics Lab, Hood Room	3 hr	1.4
2- 4-75	Main Organics Lab, G.C. Room	4 hr	1.1
2- 5-75	Per/Tri Bottoms Tank Area	5-1/2 hr	1.5
2- 5-75	No. 2 Air Blower East of Tri Drier	5-1/2 hr	15.8
5- 8-75	Area - P/T Unit Lab/7-1/2 hr	7-1/2 hr	2.7
5-13-75	Area - P/T Unit Lab/1 hr	6 hr	0.7

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PERSONNEL MONITORING FOR TRICHLOROETHYLENE

EXHIBIT II

<u>Date</u>	<u>Personnel</u>	<u>Activity/Time, Min</u>	<u>Tri, ppm</u>
1/27/75	P/T Aux. Oper.	Analytical Samples in Lab./15m.	12.0
1/27/75	P/T St. Line"	Rounds/15.8	8.1
1/28/75	P/T St. Line"	Rounds/21.2	1.2
1/28/75	P/T Aux. Op.	Collecting Sples./13.5	14.0
1/28/75	M.C. Aux. Op.	Anal. Sples. in Lab/16.0	1.7
1/28/75	M.C. Oper.	Rounds/15.0	1.8
1/30/75	P/T St. Line Op.	Rounds/17.0	17.0
1/30/75	P/T Aux. Op.	Collection Spec/20.0	33.0
1/31/75	Ship Loader	Loading Tri T.C./15.0	165.0
1/31/75	Ship Ldr. Helper	Loading Tri T.C./15.0	58.0
1/31/75	P/T Aux. Oper.	Collecting Sples./19.5	61.4
1/31/75	P/T Aux. Oper.	Anal. Sples. In Lab/12.7	16.5
1/31/75	P/T St. Line Op.	Rounds/15.3	26.7
2/5/75	P/T Aux. Oper.	Collecting Sples./26.0	0.9
2/5/75	P/T St. Line Op.	Rounds/15.0	18.8
2/5/75	Ship Loader	Loading Tri T.C./13.0	37.8
2/5/75	Ship Ldr. Help.	Loading Tri T.C./13.0	45.8
2/6/75	P/T Aux. Op.	Collecting Sples./13.5	6.1
2/6/75	P/T Aux. Op.	Collecting and Anal. Spes./16.5	6.9
2/6/75	P/T St. Line Oper.	Rounds/19.4	2.6
2/6/75	P/T St. Line Op.	Rounds/14.0	6.2
4/23/75	P/T Rx Oper.	Rounds/35	1.0
4/23/75	P/T Still Oper.	Rounds/45	3.0
4/24/75	P/T Rx Oper.	Rounds/30	0.5
4/24/75	P/T Still Oper.	Rounds/15	2.3
4/24/75	P/T Aux	Anal Samples/15	1.4
4/24/75	P/T Aux	Collecting Samples/15	8.7
4/25/75	Loader	Filling Tri Drums/15	12.9
4/25/75	Loader Helper	Filling Tri Drums/15	10.8
5/2/75	P/T Still Oper.	Rounds/12	8.9
5/5/75	P/T Rx Oper.	Rounds/15	1.6
5/5/75	P/T Still Oper.	Rounds/15	N.D.
5/6/75	Lab Anal.	Daily Routine (Wet Tests on Tri)/470	1.1
5/6/75	Lab Anal.	Daily Routine (GC on Tri)/470	0.3
5/6/75	P/T Aux. Oper	Daily Routine/450	0.7
5/6/75	P/T Still Oper.	Daily Routine/450	5.7
5/6/75	P/T Rx Oper.	Daily Routine/450	0.8
5/8/75	P/T Rx Oper.	Daily Routine/450	0.5
5/8/75	P/T Still Oper.	Daily Routine/450	1.9
5/8/75	P/T Lead Oper.	Daily Routine/450	1.0
5/8/75	P/T Aux. Oper.	Anal. Samples/20	N.D.
5/8/75	P/T Aux. Oper.	Anal. Samples/23	N.D.
5/12/75	Loader	Loading Trichlor Truck/15	N.D.
5/12/75	Loader	Tri-Ethane 324 Drum Filling/15	4.5
5/13/75	P/T Rx Oper.	Normal Daily Routine/480(8 Hr.)	1.2
5/13/75	P/T Still Oper.	Normal Daily Routine/480(8 Hr.)	1.6
5/13/75	P/T Aux. Oper.	Anal. Samples/15	0.6
5/13/75	P/T Aux. Oper.	Anal. Samples/15	3.0